

name, family, situation in the garden, country of origin, and date of introduction; interleaved blank pages are provided for notes and additions. The author is to be complimented on the accuracy of his work.

The Essentials of Histology, Descriptive and Practical, for the Use of Students. By Prof. E. A. Schafer, F.R.S. Eighth edition. Pp. xi+571. (London: Longmans, Green and Co., 1910.) Price 10s. 6d. net.

WHEN Prof. Schafer's "Essentials" made its first appearance some years ago it was at once recognised that here was the book which had long been wanted, and it has since then continued to occupy the foremost place in the estimation of both teachers and students. Every successive edition has kept the work fully up to date in regard to practical methods, descriptive letterpress, and last, but not least, illustrations. Any extended notice of such a well-known text-book is quite unnecessary; all one need say of the eighth edition is that it fully maintains the high standard of previous editions, and the author is to be congratulated on the continued and well-deserved popularity which it has obtained.

W. D. H.

The Charm of the Road. England and Wales. By James J. Hissey. Pp. xviii+426. (London: Macmillan and Co., Ltd., 1910.) Price 10s. net.

IN his latest book, Mr. Hissey is as successful as ever in painting the charms of travel in one's own country. The journey described in the present volume was begun without a premeditated plan; the author says:—"To us the destination was a trivial detail, left to settle itself each day; the joy of the journey was the thing, therein our pleasure lay." Certainly Mr. Hissey's gossipy description of the places and scenes they met with, and the quaint experiences they were fortunate enough to have, is more than sufficient to convince the reader that the fortunate possessor of a motor-car, a pleasant companion, and plenty of leisure, can have an excellent holiday indeed in straying from one shire to another, as fancy dictates.

The excellent photographs which illustrate this interesting travel book are good testimony to Mr. Hissey's keen eye for the beautiful and picturesque.

LETTERS TO THE EDITOR.

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Marine Microthermograms and the Influence of Icebergs on the Temperature of the Sea.

THE application of precise temperature measurements to the determination of the formation and disintegration of ice in the St. Lawrence River suggested to me the possibility of using very delicate electrical thermometers on shipboard to determine the proximity of icebergs. On account of the difficulty of the experiments, and the fact that well-known authorities on navigation (including Lord Kelvin) had reported that temperature measurements were

likely to be uncertain, except when very close to a berg it was some time before I could arrange for the necessary trials.

In the meantime I had devised a practical form of electrical microthermometer, which was given a thorough test on board the Canadian Government ice-breakers during the experiments made last winter to keep the river clear of ice above Quebec. So sensitive and precise did this instrument prove, that a uniform temperature gradient in the water of one-tenth of a degree per mile could be determined from the ship, approaching an ice field from open water, to an accuracy of a thousandth of a degree.

The interesting experiments of Prof. Otto Pettersson on the influence of ice on oceanic circulation, described in the *Geographical Journal* for 1904 and 1907, made it appear highly probable that the experiments I wished to try would prove successful. Dr. Pettersson showed that ice melting in salt water produced two cold currents, one of fresh water which flowed out on all sides over the surface of the sea, and one of salt water which sank down by the ordinary laws of convection. A third current of warmer sea water flowed in towards the ice, under the surface, and produced the melting of the ice.

Through the kindness of the Hon. L. P. Brodeur, Canadian Minister of Marine, passage was secured on the

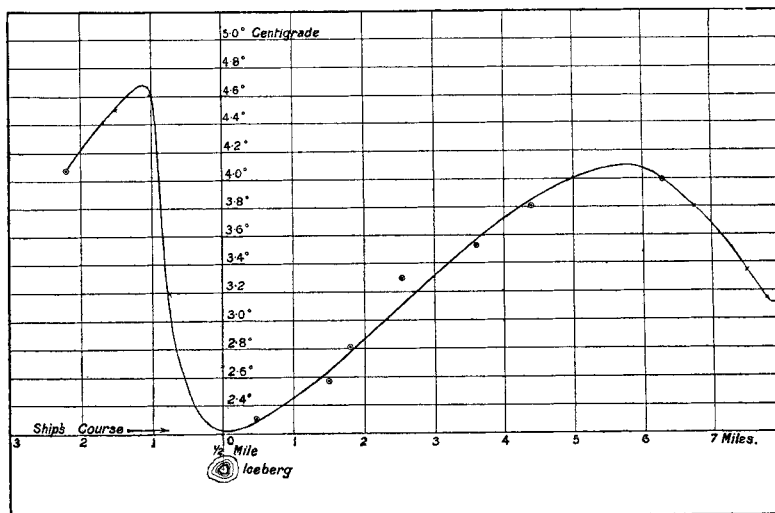


FIG. 1.—Temperature Gradient near an Iceberg.

C.G.S. Stanley for the trip to Hudsons Bay last July. As other duties prevented me from being absent from Montreal for so long a time, I was fortunate in being able to send Mr. L. V. King, who had so ably assisted me during the previous winter in ice studies, and who had gained great facility in using the microthermometer.

In addition to the ordinary wire bridge which we used in our river experiments, having a scale nearly 2 feet long for one degree, we adapted a Callendar recording mechanism to our needs, which gave us a scale of 1° C., equal to 8 inches. The automatic recorder could be switched on to the microthermometer at any time, and records accurate to one-hundredth of a degree obtained at any part of the temperature scale. They were obtained while the ship steamed at full speed through heavy seas, and were unaffected by the motion.

I venture to show two diagrams from the many Mr. King obtained, which illustrate the disturbing effect of ice on the temperature of the sea in summer. Fig. 1 shows the temperature gradient approaching and receding from a large iceberg passed within a half-mile from the ship in the open sea off the Labrador coast. The ship's course is shown relative to the iceberg. Fig. 2 shows a microthermogram of sea temperature traced directly from the charts. The proximity of ice is at once shown by a movement of the pen of the recorder off the scale, to return again to approximately the same position after the

iceberg is passed. In nearly every record we have there is a small rise of temperature above the surrounding sea temperature before the fall occurs, which seems characteristic of an iceberg effect.

In the light of the microthermograms we have obtained, the usual method of taking temperatures at sea seems decidedly inadequate. Thus, even if temperatures are taken over the side of a moving ship every fifteen minutes, readings are obtained at about two- to three-mile intervals, which obviously cannot be of much value in determining the temperature gradient characteristic of an iceberg. They might easily, as some of our charts show, indicate a rising rather than a falling temperature. The ordinary marine thermometer, with a degree one-eighth of an inch long, would miss entirely temperature effects made perfectly plain by the microthermometer. The persistence of a temperature gradient in the direction of a ship's course is one thing which I think can be relied on to give iceberg warnings, but when the whole temperature drop is

temperatures show no diurnal variation, except in the former case when near land. It seems to be well known to biologists that small temperature variations in the sea may be set up by the existence of marine life, and it is difficult to think of any other cause for what we have observed. It is interesting as indicating how important a part marine life probably plays in the conservation of solar energy.

H. T. BARNES.

McGill University, October 27.

Dun Coat Colour in the Horse.

My attention has been directed to a letter in NATURE of November 24 over the signature of Prof. J. Wilson. He disputes the accuracy of certain extractions from "The General Stud Book," which originally appeared in *The Veterinary Record*, in my paper on the inheritance of dun coat-colour. Prof. Wilson also states that in the Stud Book entries there is a considerable element of doubt. This would appear to be the usual attitude of his mind in relation to data which do not exactly fall in with his own theories.

Let me first take the case of the mare Silverlocks (foaled 1725). I most emphatically deny that "the Stud Book assumes" that this mare, which is described as a chestnut on p. 1, vol. i., is identical with a mythical chestnut mare which Prof. Wilson says was foaled exactly a hundred years later. The animal to which he probably alludes was foaled in 1824, and is entered in the third volume as a "bay colt Silverlock," by Blacklock out of Sheba's Queen. I would direct Prof. Wilson's attention to the fact that the chestnut mare Silverlocks (1725) is the only mare of that name in the first four volumes of the Stud Book, and that the Stud Book entry is perfectly authentic, since it was extracted from an early Racing Calendar which describes Silverlocks as a chestnut mare by The Bald Galloway, out of a sister to Chaunter. This mare was raced for some years, and there is no room for doubt that she was the dam of the dun colt Buffcoat, foaled 1742, and of his two dun sisters, foaled in 1738 and 1739 respectively, all three being by The Godolphin Arabian (brown or bay). Does Prof. Wilson mean to imply that Lord Godolphin was so dishonourable as to run Buffcoat under a false pedigree, for that in effect is what he would have us believe? I have already directed his attention in a private letter to the circumstance that I have a portrait of Silverlocks (1725)

which shows her an unmistakable chestnut, and not a dun.

In regard to the dun filly Sarah Curran (1892), by Robert Emmett (bay or brown), out of Cellulites (black), Prof. Wilson is certainly misleading, for he fails to disclose the fact that Messrs. Weatherby distinctly state in vol. xviii., p. 727, that "this mare erroneously appeared in the last volume as dead." Now, whether Prof. Wilson likes it or not, the breeder of Sarah Curran, Mr. J. T. Hartigan, returned this mare as a dun. I judge he was in a better position to form an opinion concerning her pedigree and colour than my critic, who never saw her.

Prof. Wilson says that the filly (1886) by Lord Gough (bay) out of Danseuse (brown) is described as a bay. Here again he does not state the whole truth. As a matter of fact, this filly was returned as bay when a foal, but her breeder specially altered the colour to *light dun* in vol. xix. She had then reached maturity, and was a brood mare.

I do not wish to take up your space in quibbling as

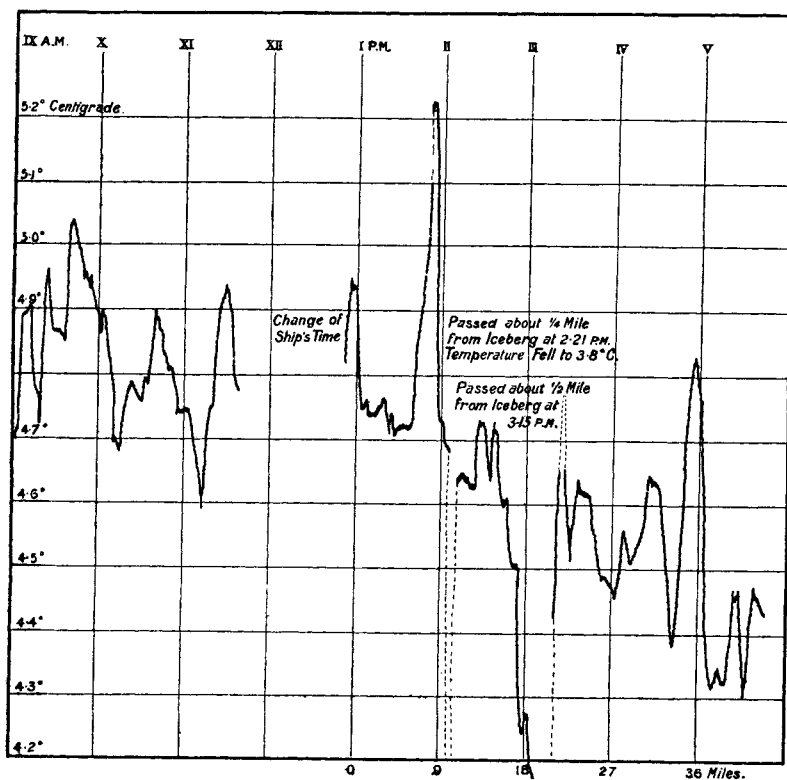


FIG. 2.—Microthermogram of the Temperature of the Sea.

fewer than two degrees in six miles it is evident that very sensitive thermometers must be used to detect it.

Besides the disturbing influence of ice, the proximity of land within a few miles produces effects of great magnitude as compared with the remarkably small variations of temperature in the open sea. In our case this was, no doubt, caused by the cold under-currents being turned up by the shoals and shore line of the Labrador coast.

For hydrographic work, the determination of current boundaries could be made with great exactness from a comparison of the temperature traces and the determination of ship's position.

The small inequalities in the temperature of the sea stand out in strong contrast to the uniform temperature of the St. Lawrence River just after the ice has moved out in the spring. These inequalities of temperature suggest at once the possibility of a vertical circulation set up by convection currents, which must be an important factor in the retention of the solar energy absorbed by the sea. It explains why our records of air and sea